

NBIS BRIDGE RATING, POSTING & SIGNING

Christopher R. Williams, P.E. – Assistant State Structure & Bridge Engineer

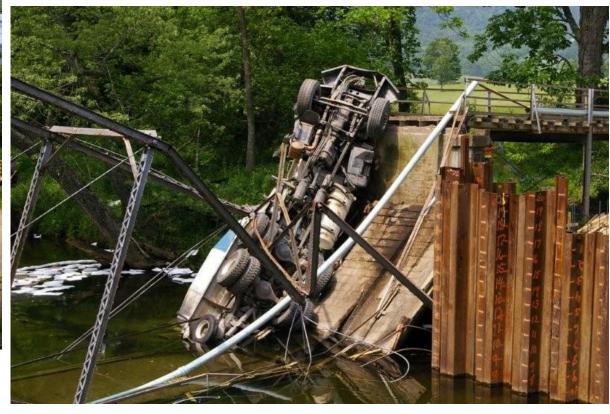
Goals today...

- Provide overview of regulatory authority
- Review of the National Bridge Inspection Standards (NBIS) requirements to perform load ratings
- Discuss upcoming changes in bridge weight limits and planned installation of new signage
- Explain what resources VDOT has made available to share information

Why Bridge Load Ratings?

To calculate safe load carrying capacity so risks can be mitigated.







Regulatory Authority

Virginia Law – Title 46.2, Chapter 10

- Article 14 Maximum Vehicle Size, Generally
- Article 15 Maximum Vehicle Widths and Heights
- Article 16 Maximum Vehicle Lengths
- Article 17 (46.2-1124 thru 46.2-1127) Axle Weights and Spacing and weight limitations
- Article 18 (46.2-1139 et seq.) Permits for Excessive Size and Weight



Regulatory Authority

Virginia Administrative Code – Title 24, Agency 20

- Chapter 80 (Overload 5% Permits per 46.2-1128)
- Chapter 81 (Hauling Permits)
 - Section 60 (Legal Weight Chart 1)
 - Section 70 (Single and Tandem axle weights without Engineering Review)
 - Section 80 (Maximum weight without Engineering Review Chart 2)



Background:

Advancements in the Trucking Industry & What it Means for DOTs

- Commercial truck manufacturers have developed more efficient vehicles with four, five, six and seven axles capable of carrying overall heavier legal loads because the weight is spread across more axles
- The Federal Highway Administration (FHWA) has deemed these vehicles Special Hauling Vehicles (SHV)
- SHVs have a higher concentration of weight in a shorter length than previous typical hauling vehicles
- Bridges built before 2007 were not designed for vehicles with these concentrated loads
- DOTs nationwide must now update bridge load ratings based on SHV legal weight standards due to FHWA mandates to align with today's trucking standards



Virginia Department of Transportation

Examples of Special Hauling Vehicles (SHV)

Four Axles



Five Axles



Six Axles



Seven Axles



Overview: VDOT's Bridge Inventory

- 21,213 bridges
 - Ranging from 195 years old to <1 year
 - Average age 49 years
 - FHWA defines a bridge as greater than 20 feet in length. These are included in the National Bridge Inventory (NBI) - 13,592 bridges
 - VDOT has 7,621 bridges less than or equal to 20 feet in length. These are not included in the NBI but are part of the VDOT bridge safety inspection program.
- VDOT inspects and load rates ALL structures to National Bridge Inspection Standards (NBIS) requirements - though not required to.
- All bridges will be evaluated based on the FHWA SHV mandate
- VDOTs NBIS program includes both VDOT responsible and VDOT oversight bridges (those owned by others for which we report to FHWA)



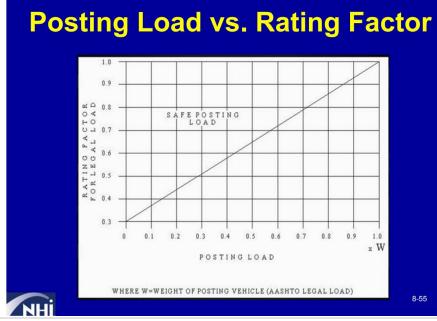
Virginia Department of Transportation

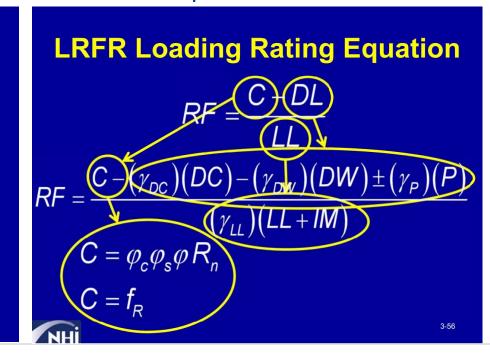
FHWA SHV Load Rating Mandate

Specialized Hauling Vehicles (SHVs)

- FHWA Memorandum (11/15/2013) directed states to consider the effects of these vehicles for all structures. (https://www.fhwa.dot.gov/bridge/loadrating/131115.cfm)
- SHVs meet the Federal Bridge Formula (FBF) chart defining Legal Vehicles
- Have been determined to exceed the force effects of the FBF envelope







Why the FHWA Mandate?

- SHVs meet federal legal weight standards and are defined in the AASHTO Manual for Bridge Evaluation (MBE)
- The NBIS is governed by 23 CFR Part 650 Subpart C which incorporates the MBE by reference
- SHVs comply with FBF and are legal vehicles in all States*
 - SHVs do not require a permit in Virginia

*unless State law explicitly excludes the use of such vehicles







Tractor Trailer

SHVs may be the same length or shorter than typical hauling vehicles and be able to legally carry a heavier load because they have more axles. This means more weight concentrated in a shorter span.



Potential Impacts of New Weight Restrictions on Bridges

Agency Impacts

- Some bridges will need updates so they are not weight-restricted to accommodate heavier vehicles where emergency response/commerce would be affected
 - Working to determine bridges that would present greatest impacts
- Mitigation of Impacts will result in additional costs
 - Engineering Evaluation
 - Field Signage
 - Updates to some bridges

Trucking Industry

- Once new weight restrictions are posted, may mean SHVs would have to take a different route to avoid weight-restricted bridges
 - GIS mapping tool being developed Truck Web
- Industry and citizens must become accustomed to new signage



Examples of Signage

Signs show familiar icons/visuals



Examples of Signage

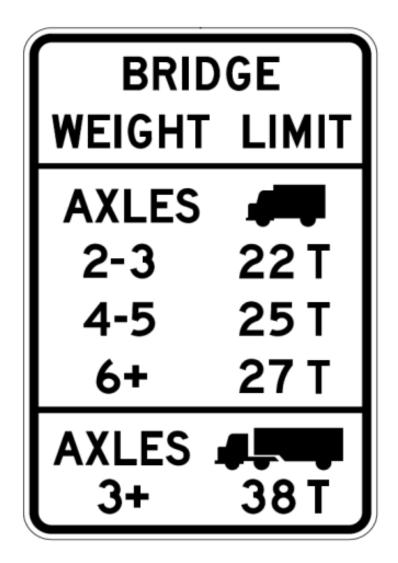
- Signs show familiar icons/visuals
- Drivers distinguish by axle count and gross vehicle weight





Examples of Signage

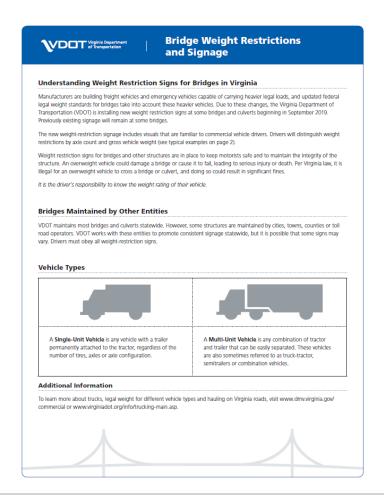
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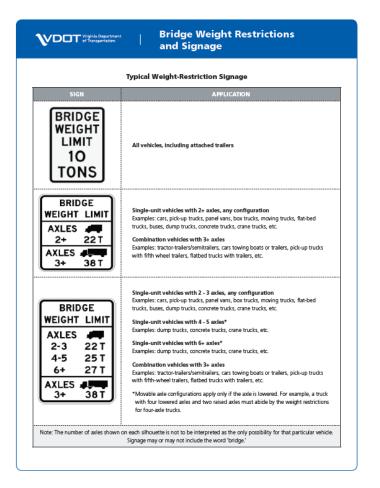




Signage Reference Sheet

Available via the VDOT and DMV websites





- To learn more about trucks, legal weight for different vehicle types and hauling on Virginia roads, visit <u>www.dmv.virginia.gov/commercial</u>.
- For information regarding VDOT's efforts and materials used during this discussion, visit <u>www.virginiadot.org/trucking</u>.
- Programmatic Questions
 - Chris Williams, Assistant Division Administrator, Structure and Bridge
 - Christopher.Williams@vdot.virginia.gov



www.virginiadot.org/trucking

Weight, Height or Width Restrictions at Bridges and Tunnels

Bridges

Various bridges statewide have restrictions on the weight, height, or width of vehicles. Signs posted on the highway at the affected bridges indicate these restrictions.

Find restricted bridges: For a current listing (updated daily) of bridges statewide posted with restricted weight limits (does not include height or width limitations), click here.

A map of state-maintained bridges with restrictions on height, width as well as weight bridges is available upon request to vdotmapfiles@vdot.virginia.gov. The mapping is updated bi-annually.

1	BRIDGE											
ı	WEIGHT	LIMIT										
ı	AXLES	7										
ı	2-3	22 T										
ı	4-5	25 T										
ı	6+	27 T										
ı	AXLES	454										
Į	3+	38 T										





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REPORT A ROAD PROBLEM (800-FOR-ROAD (800-367-7623)

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SMART SCALE Dashboard

Funding the right transportation projects.



Virginia Roads

Your one-stop source for VDOT maps, data



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RT @GovernorVA: .@FirstLadyVA and I just voted, and you should too! Remember. To Polls are open from 6:00 AM until 7:00 PM 📥 Absentee



RT @vaELE Election Day. Virginial Find v lace at https://t.co/dmp 1191740379290169345 open today.



Other Links

- VirginiaRoads.org Portal
- O Open to the Public
- Highway Safety Challenge
- O Six-Year Improvement Program database

Virginia Trucking Resources

New Bridge Weight-Restriction Signage Information Session

Mew! The Virginia Department of Transportation (VDOT) will host an online information session about new statewide bridge weight-restriction signage on Wednesday, Nov. 13, at 2 p.m. A link to the livestream will be posted here a few hours before the event.

Everyone affected by these changes - those in the trucking industry, business owners and drivers - is encouraged to

For more information about the event and to RSVP, click here. Informational materials shared during the session will be posted below for those unable to attend.

Vehicle Size, Weight, and Equipment Requirements

Virginia has various requirements regarding vehicle size (length, width, and height), weight, as well as equipment and safety devices (e.g. tires, lights etc.) for travel on the commonwealth's highways.

See the Department of Motor Vehicles (DMV) "Size, Weight, and Equipment Requirements" for details. Phone: 804-497-

For size and weight services for motor carriers, such as information on monitoring, inspection and enforcement, vehicle size, weight, and equipment requirements, etc., contact DMV's Motor Carrier Services Division at 804-249-5130.

Hauling Permits

Overweight and oversized loads (those not conforming to Virginia's vehicle size and weight requirements) need permits to travel legally in Virginia.

See DMV's Hauling Permits here or contact the DMV Hauling Permit Section at 804-497-7135.

Highway Restrictions and Limitations

Various highways, bridges, and bridge-tunnels have size and weight restrictions or other requirements. These are below.

Hazardous Material (HAZMAT) Restrictions

For information on the transport of hazardous materials on highways in Virginia or through one of the six state-owned tunnels, see DMV's "Size, Weight, and Equipment Requirements

For information on transporting hazardous materials through the privately owned and maintained Chesapeake Bay Bridge-Tunnel, see http://www.cbbt.com/hazmat.html or call 757-331-2960.

Note: The Airport Tunnel in the city of Roanoke (Route 118) is restricted to all hazardous materials. A suggested detour: Hershberger Road (Route 101) to Williamson Road (Route 11), then Peters Creek Road (Route 117).

EXPLOSIVES

Weight, Height or Width Restrictions at Bridges and Tunnels

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A map of state-maintained bridges with restrictions on height, width as well as weight bridges is

- www.virginiadot.org/trucking
- Live spreadsheet shows all bridge weight restrictions once signs have been installed

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District	Jurisdiction	Route	Route Name	VA Struc No.	Fed Struc Id	Crossing	Туре	Year Built	Year Recnst (State)	Year Recns (Fed)	t Canal	Supe Cond	r Sub d Cond	Culvert Cond	NBI	Func Obslt	Struc Defic	Last Inspected	Weight Posting Status	Single Sign - Single Unit Vehicle - Posted Capacity (in tons)	Dual Sign - Single Unit Vehicle - Posted Capacity (in tons)	Dual Sign - Combination Unit Vehicle - Posted Capacity (in tons)	Responsibility	Structure Length (FT)	(ET)	Avg Daily Traffic	Road System	Report Date
Bristo1	Tazewell County	00770	ASCUE ROAD	6233	0018681	INDIAN CREEK	Bridge	1932	0	-1	5	5	6	N	Y	FO		7/17/2018	Posted	0	27	40	VDOT	53.0999984741211	21	283	Secondary	10/28/2019
Bristo1	Dickenson County	00083	ROUTE 0083	1049	0005818	BRANCH	Bridge	1941	0	-1	5	5	6	N	N	FO		1/15/2019	Posted	0	27	40	VDOT	12.1000003814697	26.6000003814697	5628	Primary	10/28/2019
Bristo1	Wythe County	00052	FORT CHISWELL RD.	1014	0019539	GLADE CREEK	Bridge	1932	1950	1950	5	5	6	N	Y			3/4/2019	Posted	0	27	40	VDOT	22	36	2738	Primary	10/28/2019
Bristo1	Lee County	00604	ROUTE 604	6353	0010779	BRANCH	Bridge	1932	0	-1	6	6	5	N	N			12/8/2017	Posted	0	27	40	VDOT	8.89999961853027	19.3999996185303	61	Secondary	10/28/2019
Bristo1	Washington County	00694	STONYBROOK ROAD	6250	0019123	BRANCH	Bridge	1932	0	-1	4	4	5	N	N		SD	7/8/2019	Posted	0	27	40	VDOT	13	26.2000007629395	396	Secondary	10/28/2019
Bristo1	Washington County	00726	CHESTNUT MTN. RD	6283	0019164	STREAM	Bridge	1937	0	-1	7	6	5	N	N	FO		10/10/2018	Posted	0	14	23	VDOT	20	18	177	Secondary	10/28/2019
Bristo1	Norton	00000	MAIN AVENUE SW	8000	0022441	BENGES BRANCH	Bridge	1932	0	-1	4	4	6	N	Y		SD	3/20/2019	Posted	0	27	40	City	23	25.8999996185303	2431	Urban	10/28/2019
Bristo1	Washington County	00058	JEB STUART HWY	1081	0018881	STRAIGHT BRANCH	Bridge	1950	0		6	6	5	N	N			6/15/2018	Posted	0	27	40	VDOT	22	27.2999992370605	674	Primary	10/28/2019
Bristo1	Lee County	00616	ROUTE 616	6014	0010807	WALLENS CREEK	Bridge	1932	0	-1	6	6	5	N	Y	FO		5/8/2019	Posted	0	23	34	VDOT	85	14.1000003814697	247	Secondary	10/28/2019
Bristo1	Wythe County	00734	ASBURY CHURCH RD	6076	0019779	CRIPPLE CREEK	Bridge	1932	0	-1	6	5	6	N	Y	FO		10/1/2018	Posted	0	19	28	VDOT	42	15	120	Secondary	10/28/2019



Specific Local Concerns Contact VDOT District Representatives

- **Bristol** Gary Lester, 276-696-3372
- Salem Dean Hackett, 540-387-5311
- Lynchburg Kenneth Martin, 434-856-8175
- Richmond Sean Nelson, 804-524-6096
- Hampton Roads E. Alex Jarrell, 757-956-2054
- Fredericksburg Leslie Danovich, 540-899-4343

Culpeper Lou Hatter, 540-717-2890 Staunton Washington, D.C. Susan Hammond, 540-462-6990 Northern Virginia Juan Rocha Encinas, 703-259-2393 ACCOMAC BUCKINGHAM PITTSYLVANIA TECHARLOT SALEM Norton BRISTOL

PATRICK

VDOT Districts

ROADS



QUESTIONS?



